



Groundwater Monitoring Newsletter

November 2013

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Canadian Pipe & Pump Supply is an industry leader engaged in the manufacturing and distribution of pipe product used in waterwell and groundwater monitoring applications. In addition, we supply pumps and accessories used in conjunction with our pipe. We firmly believe in helping our customers grow their businesses. Our skilled team of industry experts can help select the proper product for your application or help to design a custom solution.

We have four locations across Ontario to serve your needs. Please visit us at one of our branches located in Toronto, Orillia, Ottawa or Tillsonburg.

Motor Failure

We are proud to provide our customers with top of the line products that offer high ROI due to high quality levels that provide a long life-cycle. Even the best engineered products experience issues that can cause a motor to fail earlier than expected. Today we will be exploring the top three reasons for motor failure that we routinely see:

1. Electrical failure
2. Mechanical failure
3. Mechanical issues that lead to electrical failure

Electrical Failure

Most electrical failures, around three-quarters, occur because of winding damage in the motor stator caused by voltage problems or overheating. As the electrical current increases above normal, heat increases in the winding, which in turn has an adverse effect on the motor's life. Typically, every 10 degrees Celsius above the motor's specifications cuts its lifetime in half. Amps can run higher due to a number of common issues, including damaged impellers, a pump bound with sand, or voltages out of tolerances. Also, nearby lightning strikes or fluctuations in the electric grid can create high voltage spikes that can break down the insulation resistance of motors.

You can help extend the life-cycle of your pumps' motors by installing a surge arrester that can handle high voltage surges or multiple spikes. If overload protection is installed, it should provide Class 10 protection for the motor.

Mechanical Failure

Typically, when a motor experiences mechanical failure it is due to one of the following problems:

- **Motor spline damage:** Usually caused by sand or lime deposits or an internal misalignment between the pump, motor or upthrusting bearings.
- **Damaged shaft(s):** Usually caused by a motor starting while back spinning or too much load on one side of the affected shaft (typically due to loose pump bolts).
- **Damaged bearings (radial, thrust or upthrust):** Radial bearing failure usually happens when sand or grit gets in the motor casing once the shaft seal wears out. The failure of the radial bearing has a cascade effect on the other bearings as its debris creates undue wear, leading to general motor failure.

Some ways to minimize the occurrence of these problems include:

- Use waterproof grease while attaching the motor shaft to the spline coupling to protect the unit from sand and lime deposits.
- Make sure the check valves are in good condition to prevent back spinning.
- Double check the electrical components for loose fittings that can lead to shaft damage when the motor experiences a cycle of rapid starting and stopping.

Mechanical Issues that lead to Electrical Failures

It is important to note that some mechanical issues will also result in an electrical failure. For example, if the bearings begin to fail, it can cause the motor to wear through its stator lining, in turn causing the motor to be grounded. If this is the case, what appears to be an electrical problem is really a direct result of a mechanical issue.

There are many other factors that can lead to motor failure, such as deadheading or water hammer. Understanding how surrounding environmental conditions can impact the longevity of motors is essential to increasing its ROI. We firmly believe that by helping our customers understand the potential issues that can reduce a motor's life, they can take steps during the installation stage to increase their Return on Investment. If you have further questions on motor failures, please do not hesitate to discuss them with your CPPS Rep.



We look forward to your business and partnering with you to help drive your growth in 2013.

Sincerely,

Robert Martini
Vice-President General Manager